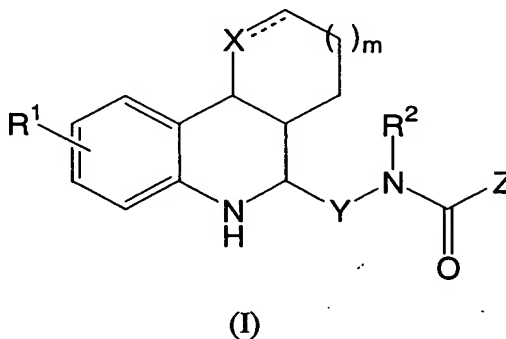


CLAIMS

1. A tetrahydroquinoline derivative represented by the following formula (I) or pharmacologically acceptable salts thereof:



wherein R¹ represents a nitro group or a cyano group;
X represents CH or O, provided that when X is CH, the dashed line represents a double bond;

10 m represents 0 or 1;

Y represents an alkylene group having 1 - 5 carbon atoms which may be substituted by a substituent selected from the group consisting of an alkyl group having 1 - 5 carbon atoms and a cycloalkyl group having 3 - 7 carbon atoms;

15 R² represents a hydrogen atom, an alkyl group having 1 - 5 carbon atoms, a cycloalkyl group having 3 - 7 carbon atoms or an aralkyl group having 7 - 9 carbon atoms;

Z represents -B-O-Q

[wherein B represents an alkylene group having 1 - 5 carbon atoms which may be substituted by a substituent selected from the group consisting of an alkyl group having 1 - 5 carbon atoms and a cycloalkyl group having 3 - 7 carbon

atoms; Q is a hydrogen atom, an alkyl group having 1 - 5 carbon atoms or a cycloalkyl group having 3 - 7 carbon atoms which may be substituted by a substituent selected from the group consisting of a halogen atom, a hydroxyl group, a cyano group and an alkoxy group having 1 - 5 carbon atoms, or an aryl group, a heteroaryl group or an aralkyl group having 7 - 9 carbon atoms which may have a substituent R³,

R³ represents an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom, a halogen atom, an aryl group, a heteroaryl group, a nitro group, a cyano group, -A-R⁴ {wherein A represents -CO-, -CO₂-, -COS-, -CONR⁵-, -O-, -OCO-, -OSO₂-, -S-, -SCO-, -SO-, -SO₂-, -NR⁵-, -NR⁵CO-, -NR⁵SO₂-, -NR⁵CONH-, -NR⁵CSNH- or -NR⁵COO- (wherein R⁵ represents a hydrogen atom, an alkyl group having 1 - 5 carbon atoms, a cycloalkyl group having 3 - 7 carbon atoms or an aralkyl group having 7 - 9 carbon atoms)}, R⁴ is a hydrogen atom, an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom, a cycloalkyl group having 3 - 7 carbon atoms, a halogen atom, or an aryl group or a heteroaryl group which may be substituted by R⁶ (wherein R⁶ represents an alkyl group having 1 - 5 carbon atoms, an alkoxy group having 1 - 5 carbon atoms or a halogen atom), provided that when A is -NR⁵- or -CONR⁵-, R⁴ and R⁵ may, together with the nitrogen atom to which they are bonded, form pyrrolidine or piperidine)}, or -A'-(CH₂)_n-R⁴' {wherein A' represents a single bond, -CO-, -CO₂-, -COS-, -CONR⁵'-, -O-, -OCO-, -OSO₂-,

-S-, -SCO-, -SO-, -SO₂-, -NR^{5'}-, -NR^{5'}CO-,
 -NR^{5'}SO₂-, -NR^{5'}CONH-, -NR^{5'}CSNH- or -NR^{5'}COO- (wherein R^{5'}
 represents a hydrogen atom, an alkyl group having 1 - 5
 carbon atoms, a cycloalkyl group having 3 - 7 carbon atoms
 5 or an aralkyl group having 7 - 9 carbon atoms), n
 represents an integer of 1 or 2, R^{4'} represents a hydrogen
 atom, an alkyl group having 1 - 5 carbon atoms which may be
 substituted by a fluorine atom, a cycloalkyl group having
 3 - 7 carbon atoms, a halogen atom, a hydroxyl group, a
 10 cyano group, an alkoxy group having 1 - 5 carbon atoms, an
 alkylacyloxy group having 2 - 5 carbon atoms, an
 alkoxycarbonyl group having 2 - 5 carbon atoms, an aryl
 group or a heteroaryl group which may be substituted by R^{6'}
 (wherein R^{6'} represents an alkyl group having 1 - 5 carbon
 15 atoms, an alkoxy group having 1 - 5 carbon atoms or a
 halogen atom), or -NR^{7'}R^{8'} (wherein R^{7'} and R^{8'} each
 independently have the same meaning as the aforementioned
 R^{5'}, provided that R^{7'} and R^{8'} may, together with the
 nitrogen atom to which they are bonded, form pyrrolidine or
 20 piperidine), provided that when A' is -NR^{5'}- or -CONR^{5'}-, R^{4'}
 and R^{5'} may, together with the -N-(CH₂)_n- to which they are
 bonded, form pyrrolidine or piperidine}], or alternatively
 Z represents -(CH₂)_r-W
 [wherein r represents an integer of 0 - 2, W represents
 25 a phenyl group having substituent R⁹ at p-position, a
 naphthyl group which may have substituent R¹⁰ or a
 heteroaryl group which may be substituted by 1 - 3
 independent R¹¹'s (wherein R⁹, R¹⁰ and R¹¹ independently have

the same meaning as the aforementioned R³)]].

2. The tetrahydroquinoline derivative according to claim 1, where Y is -CH(CH₃)-CH₂- or -C(CH₃)₂-CH₂-, X is CH, m is 0, R² is a hydrogen atom and Z is -CH₂-O-Q (wherein Q represents an alkyl group having 1 - 5 carbon atoms) or pharmacologically acceptable salts thereof.

3. The tetrahydroquinoline derivative according to claim 1, where Y is -CH(CH₃)-CH₂- or -C(CH₃)₂-CH₂-, m is 0, R² is a hydrogen atom and Z is -W [wherein W is a heteroaryl group which may be substituted by 1 - 3 independent R¹¹'s or a phenyl group having substituent R⁹ at p-position {wherein R¹¹ and R⁹ independently represent a halogen atom, an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom, a nitro group, a cyano group, -A-R⁴ (wherein A is -CO-, -CO₂-, -O-, -NHCO- or -NHCONH-, and R⁴ is a hydrogen atom or an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom) or -A'-(CH₂)_n-R⁴' (wherein A' is -CO-, -CO₂-, -O-, -NHCO- or -NHCONH-, R⁴' is a hydrogen atom, an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom, a hydroxyl group, a halogen atom or an alkoxy group having 1 - 5 carbon atoms, and n is an integer of 1 or 2)}}] or pharmacologically acceptable salts thereof.

4. The tetrahydroquinoline derivative according to claim 3, where Z is a phenyl group having substituent R⁹ at p-position or a heteroaryl group having substituent R¹¹ {wherein R⁹ and R¹¹ independently represent a halogen atom, -O-R⁴ or -NHCO-R⁴ (wherein R⁴ represents a hydrogen atom or

an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom)) or pharmacologically acceptable salts thereof.

5. The tetrahydroquinoline derivative according to
5 claim 3, where Z is a phenyl group having substituent R⁹ at p-position or a heteroaryl group having substituent R¹¹ {wherein R⁹ and R¹¹ represent -NHCO-R⁴ (wherein R⁴ represents a hydrogen atom or an alkyl group having 1 - 5 carbon atoms which may be substituted by a fluorine atom)) or
10 pharmacologically acceptable salts thereof.

6. A pharmaceutical comprising the tetrahydroquinoline derivative or pharmacologically acceptable salts thereof according to any one of claims 1 to 5 as an active ingredient.

15 7. The pharmaceutical according to claim 6, which is an androgen receptor agonist.

8. The pharmaceutical according to claim 7, which can be used in the prevention or treatment of wasting disease or osteoporosis.

20 9. The pharmaceutical according to claim 7, which can be used in the prevention or treatment of a disease selected from the group consisting of male hypogonadism, male sexual dysfunction, abnormal sex differentiation, male delayed puberty, cancer in female genital organ, breast
25 cancer, mastopathy, endometriosis and female sexual dysfunction.

10. The pharmaceutical according to claim 7, which can be used in the prevention or treatment of hematopoietic

dysfunction and diseases related thereto.

11. A method of preventing or treating wasting disease or osteoporosis, which comprises administering to a mammal in need of such prevention or treatment, the

5 tetrahydroquinoline derivative or pharmacologically acceptable salts thereof according to any one of claims 1 to 5 in an amount effective to prevent or treat those diseases.

12. A method of preventing or treating a disease

10 selected from the group consisting of male hypogonadism, male sexual dysfunction, abnormal sex differentiation, male delayed puberty, cancer in female genital organ, breast cancer, mastopathy, endometriosis and female sexual dysfunction, which comprises administering to a mammal in
15 need of such prevention or treatment, the tetrahydroquinoline derivative or pharmacologically acceptable salts thereof according to any one of claims 1 to 5 in an amount effective to prevent or treat those diseases.

20 13. A method of preventing or treating hematopoietic dysfunction or diseases related thereto, which comprises administering to a mammal in need of such prevention or treatment, the tetrahydroquinoline derivative or pharmacologically acceptable salts thereof according to any
25 one of claims 1 to 5 in an amount effective to prevent or treat those diseases.